

New wasp-waisted clearwing moths (Lepidoptera, Sesiidae, Tinthiinae) from Vietnam and Taiwan*

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Abstract Two new Similipepsini species, *Gasterostena rubricincta* sp. nov. and *Gasterostena funebris* sp. nov., from Vietnam and Taiwan respectively, are described. The taxonomic position of the genus is discussed briefly. *Corematosetia minuta* sp. nov. in the tribe Pennisetiini is described from Vietnam.

Key words Similipepsini, Pennisetiini, new species, Oriental region, taxonomy.

The Tinthiinae comprise the numerically smaller of the two major evolutionary lineages of the family Sesiidae with less than 10% of the world fauna belonging to this subfamily (Pühringer & Kallies, 2004). Although this group occurs in all zoogeographic regions, the main diversity of the subfamily lies within the Oriental region. While only a few taxa occur in the Afro-tropical region, the New World, in particular the Neotropic region, supports a large number of species (Eichlin, 1986). South-east Asia alone, however, harbors a generically diverse Tinthiinae fauna (Pühringer & Kallies, 2004). The Tinthiinae of Vietnam and Taiwan were the subject of a series of recent studies. Kallies & Arita (2001) described several taxa and listed 21 species of this subfamily in 10 different genera for Vietnam. Arita & Gorbunov (2003) named another two species and a new genus, *Gasterostena*, from the same area. The same authors revised the Tinthiinae species of Taiwan (Arita & Gorbunov, 2002a, 2002b) recognizing a total of 13 species in 9 genera. This diversity of a Sesiidae group is remarkable and paralleled by the richness of Melittiini found in this region, in particular northern Vietnam (Kallies & Arita 2004).

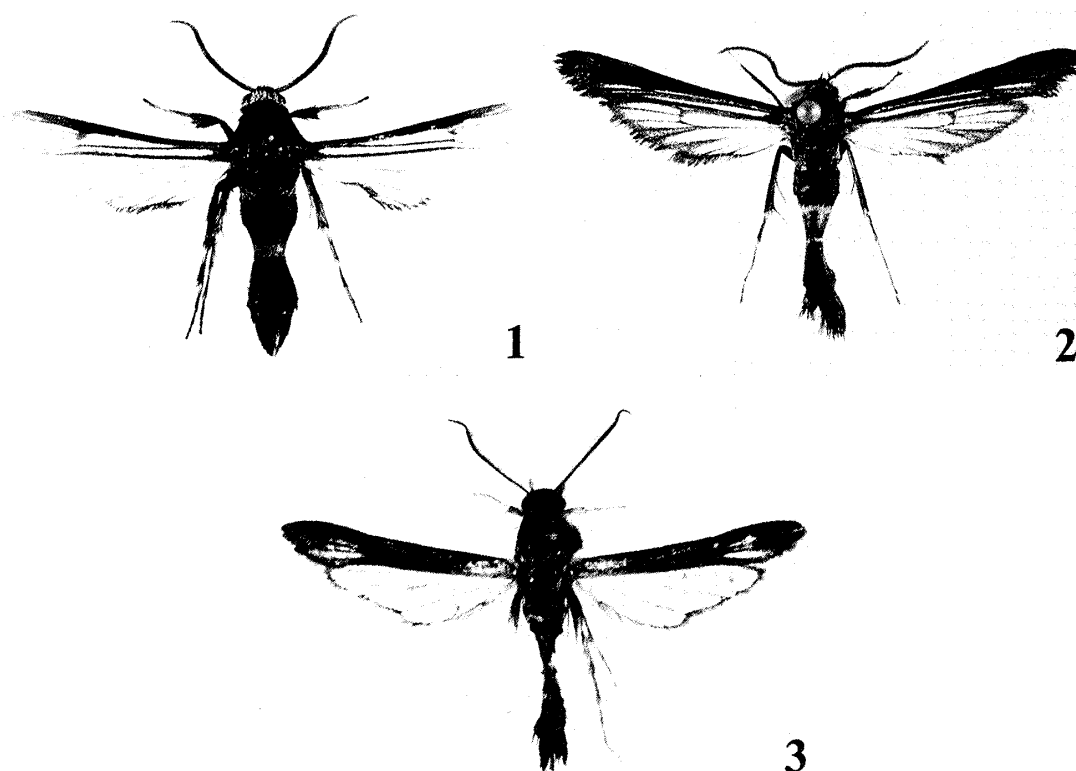
Here we describe another three species of the Tinthiinae genera *Gasterostena* and *Corematosetia* from Vietnam and Taiwan. All three species, *Gasterostena rubricincta* sp. nov. and *Corematosetia minuta* sp. nov. from Vietnam and *Gasterostena funebris* sp. nov. from Taiwan, are very distinct and can readily be separated from their congeners described previously.

All specimens examined are kept in the collection of the National Science Museum, Tokyo, Japan (NSMT).

Gasterostena Arita & Gorbunov, 2003

Gasterostena was described in the tribe Similipepsini (Arita & Gorbunov 2003); however, this placement is supported only by few characters and requires further attention. In particular the formation of the uncus-tegumen complex and the structure of the juxta would sup-

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Figs 1–3. Tinthiinae moths. 1. *Gasterostena rubricincta* sp. nov. Holotype ♂, alar expanse 21.5 mm. 2. *Gasterostena funebris* sp. nov. Holotype ♂, alar expanse 30 mm. 3. *Corematosetia minuta* sp. nov. Holotype ♂, alar expanse 15 mm.

port a position in an extended concept of Pennisetiini. Furthermore, the venation of the hindwing (veins CuP and A₁ well-developed) places *Gasterostena* closer to Pennisetiini (A₁ developed) and separates it from typical Similipepsini (A₁ absent). More material, in particular female specimens, is needed to study this problem in depth.

***Gasterostena rubricincta* sp. nov.** (Figs 1, 4)

Material. Holotype. ♂, Vietnam, Lang Dong Prov., Bao Loc, Deo Bao Loc, ca 600 m, 1. VI. 2002, Y. Arita leg. Paratype. 1 ♂, same dates as holotype.

Description. ♂ (holotype, Fig. 1). Alar expanse 21.5 mm; forewing length 9 mm; body length 11 mm; antenna 4.5 mm.

Head: black; frons shiny black, laterally with narrow white stripes; antenna bipectinate, black, apex brown; labial palps black, apically mixed with white; proboscis developed; scapus ventrally white; pericephalic scales white. **Thorax:** black; mesothorax with yellow subdorsal hairs. **Legs:** fore coxa black with few individual white scales; ventral side of tibia and tarsus cream; hind coxa black with few white scales; mid femur with white posterior margin; mid tibia in the middle and apical section with cream to white scales; tarsus black, the two proximal joints with cream distal ends; hind coxa mainly white to grey; hind femur black, masked with grey. **Forewings:** veins black; with some orange scales at the wing base; discal spot and veins in the external transparent area (ETA) orange; cells of ETA between veins R₃ to R₅ with semitransparent scales; anterior transparent area bordered with orange scales towards the costal margin; fringe pale orange-yellow. **Ventrally** all veins and

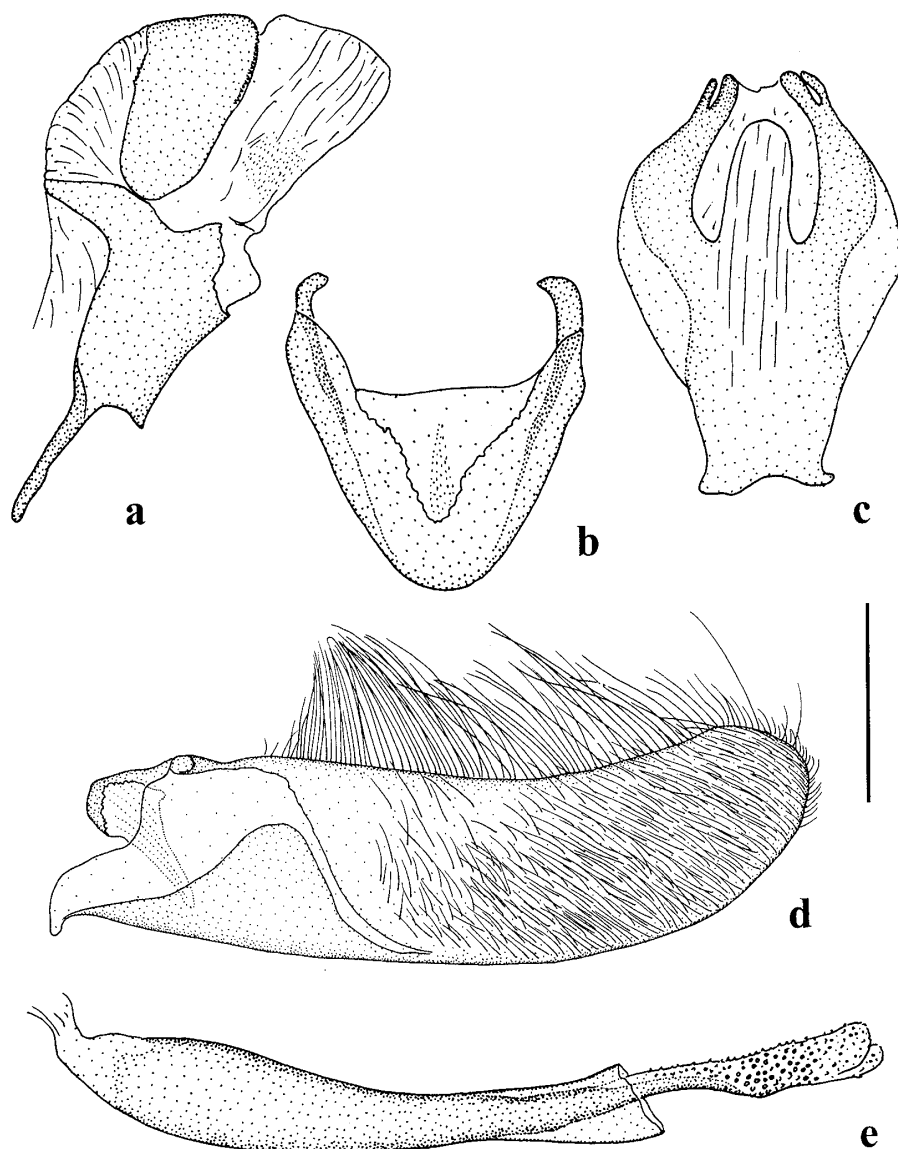


Fig. 4. *Gasterostena rubricincta* sp. nov., male genitalia. a. Uncus-tegumen complex, lateral. b. Saccus, ventral. c. Juxta, ventral. d. Right valva, ventral. e. Aedeagus. Scale bar 0.5 mm.

margins orange-yellow. Hindwings: transparent, most veins orange-yellow, A_2 and A_3 black; fringe pale orange-yellow, black towards anal margin. Abdomen: black; constricted at segments 3–5; tergite 4 bright red; sternite 4 bright white; sternite 5 partly white; sternite dusted with white scales; anal tuft black, apical scales red, dorsal and ventral with lines of orange scales.

Male genitalia (Fig. 4; paratype, gen. prep. AK380/YA1877). Uncus-tegumen complex rather short and arched dorsally, uncus simple, connected to the tegumen by a membrane only; tuba analis prominent, with only weak sclerotization ventrally (Fig. 4a); saccus simple (Fig. 4b); juxta forming a laterally bulging tube, sclerotized arms apically furcate, connecting membrane with individual minute setae (Fig. 4b); valva simple and as described for other species (Fig. 4d); aedeagus only somewhat longer than valva, apically membranous, dentate (Fig. 4e).

Diagnosis. This species cannot be confused with any other Tinthiinae. It seems to occupy

an isolated position in the genus, being unique in its external appearance. While other species of the genus are slender and have multiple yellow abdominal rings, *G. rubricincta* sp. nov. is stout, black bodied and has a single orange-red abdominal belt.

Variability. The paratype is slightly smaller with a wing span of 21 mm.

***Gasterostena funebris* sp. nov.** (Figs 2, 5)

Material. Holotype. ♂, Taiwan, Nantou Hsien, Lushan, Tunpala, 3. VII. 1995, J. Luo leg. Paratype. 1 ♂, Taiwan, Nantou Hsien, Nanshanchi, 6. VI. 1997, J. Luo leg.

Description. ♂ (holotype, Fig. 2). Alar expanse 30 mm; forewing length 13 mm; body length 14.5 mm; antenna 6 mm.

Head: black; scapus ventrally white; antenna bipectinate; labial palps apically mixed with

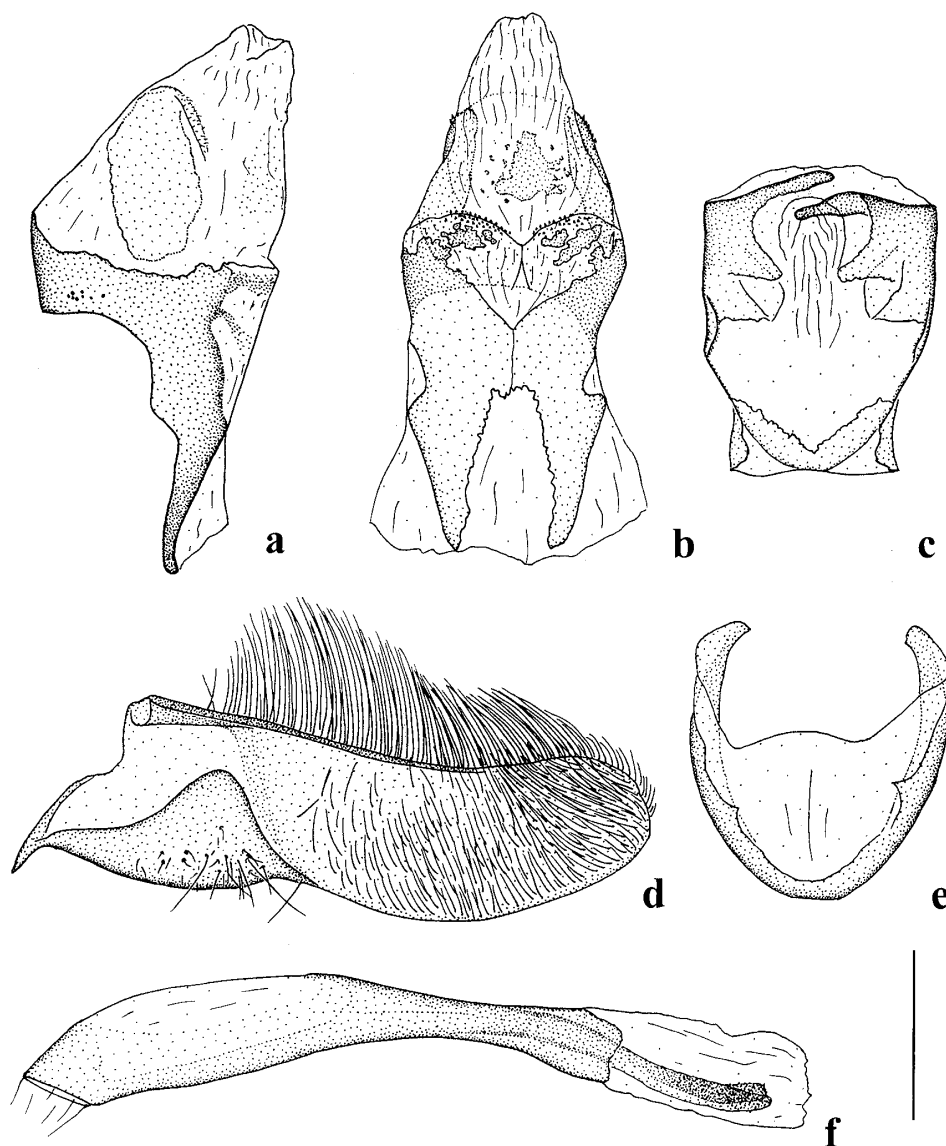


Fig. 5. *Gasterostena funebris* sp. nov., male genitalia. a-b. Uncus-tegumen complex (a: lateral; b: ventral). c. Juxta, ventral. d. Right valva, ventral. e. Saccus, ventral. f. Aedeagus. Scale bar 0.5 mm.

white; pericephalic scales with some white dorsally; proboscis very small, probably non-functional. Thorax: black, with a few yellow scales along inner margin of tegula. Legs: fore leg black, fore tibia and tarsus ventrally dirty grey, tarsomers dorsally yellow except from basal tarsomer; mid leg black, yellow in distal part of femur and at the distal ends of tibia and basal tarsomer; hind coxa white; hind femur black, yellow in distal portion; hind tibia black, with white and yellow scales close to the spurs and apically; hind tarsus black, dorsally mixed with white, medially white; the basal two tarsomers white at distal ends. Forewings: almost completely opaque, brown with strong violet sheen; anterior transparent area reduced to a narrow streak in posterior part; posterior transparent area narrow; external transparent area reduced to the proximal part of cell M_2 - Cu_1 and a semi-hyaline cell between veins Cu_1 - Cu_2 . Ventral side similar to dorsal side, but costal margin deep yellow except distal portion. Hindwings: mainly transparent; cells covered with brown violet shining scales close to outer margin; cell between veins Cu_1 and Cu_2 completely opaque; discal spot relatively broad. Ventral side similar to dorsal side, but costal margin deep yellow except in the distal portion. Abdomen: black; constricted at segments 3-5; distal margins of tergites 3 and 4 deep yellow; anal tuft black, yellow in middle part; sternite 3 in distal part, sternite 4 completely, sternite 5 almost entirely white.

Male genitalia (Fig. 5; paratype, gen. prep. No AK47/YA1873). Uncus-tegumen with uncus reduced to two separate plates, the latter with minute spines along the posterior margins, connected to each other and to the tegumen by membranes only; tuba analis prominent, with only weak sclerotization ventrally (Figs 5a, b); juxta forming a ventrally membranous tube (Fig. 5c); valva simple and as described for other species (Fig. 5d); saccus simple (Fig. 5e); aedeagus considerably longer than valva, apically furcate (Fig. 5f).

Diagnosis. This species cannot be confused with any of its congeners. While *G. funebris* sp. nov. has almost completely opaque forewings and partly scaled hindwings, all other species of the genus have transparent wings nearly throughout.

Variability. The paratype is slightly smaller with a wing span of 28 mm.

***Corematosetia* Kallies & Arita, 2001**

The genus *Corematosetia* was based on a single species, *C. naumanni* Kallies & Arita, 2001. It belongs to the tribe Pennisetiini and is the only known group of Sesiidae possessing coremata. The species described here is a remarkable addition to the genus. It fits the original generic description well, but permits the modification of the genus definition: antenna biciliate (in *C. minuta*) or with a single row of cilia (in *C. naumanni*), antenna serrate (in *C. naumanni*) or smooth (in *C. minuta*); mid leg conspicuously longer and stronger than hind leg (in both species) and with only one strong spur (in *C. minuta*) or with a pair of spurs apically (in *C. naumanni*), hind leg with two pairs of short spurs (in both species); hindwing with an degenerated vein arising from base of Cu_2 (in *C. naumanni*) or without (in *C. minuta*).

***Corematosetia minuta* sp. nov. (Figs 3, 6)**

Material. Holotype. ♂, S. Vietnam, Dambri, 2. V. 2000, K. Fukuzumi leg.

Description. ♂ (holotype, Fig. 3). Alar expanse 15 mm; forewing length 7 mm; body length 8 mm; antenna 3.5 mm.

Head: antenna black, biciliate; labial palps yellowish, white at ventral side; vertex black, long and smooth, covering half of the frons, anteriorly with some yellow and white scales;

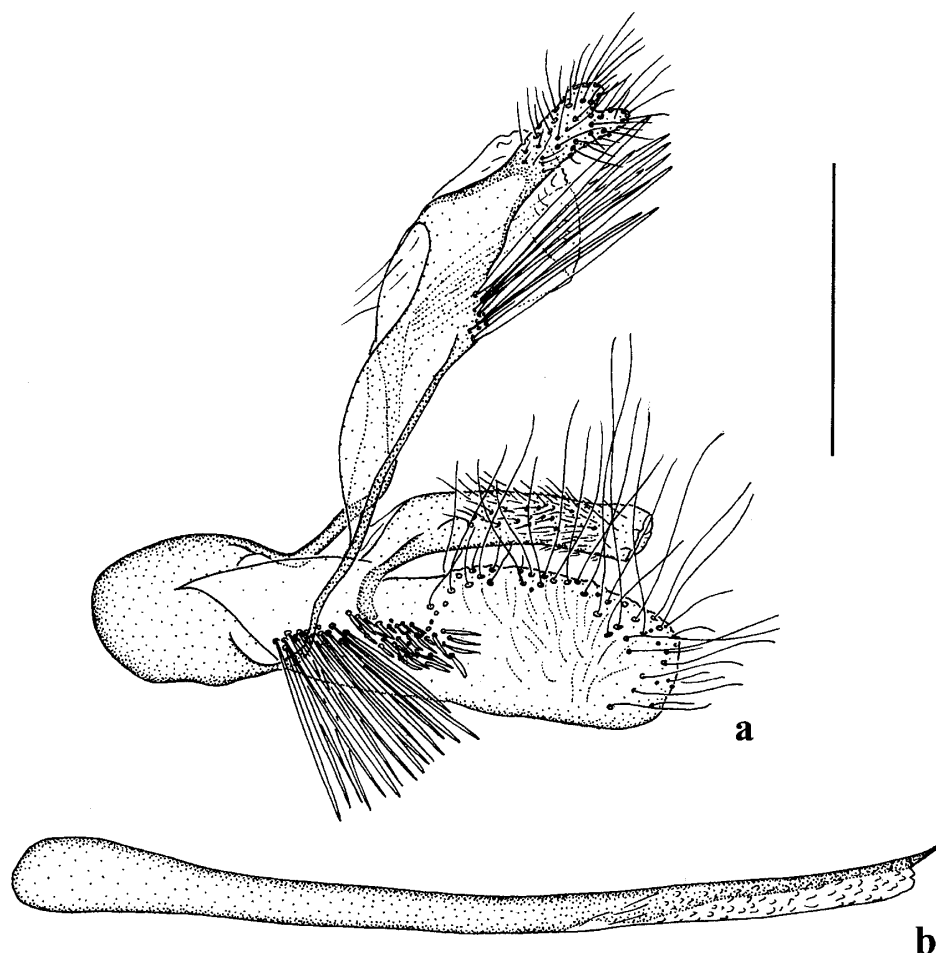


Fig. 6. *Corematosetia minuta* sp. nov., male genitalia. a. lateral view, aedeagus and left valva removed. b. Aedeagus. Scale bar 0.5 mm.

pericephalic scales black dorsally, white ventrally. Legs: neck plate white; fore coxa grey, white at base; fore femur grey, distally white; fore tibia and tarsus yellow to white; mid and hind coxae grey with some white scales apically; mid femur grey, white in distal half; mid tibia and tarsus white ventrally, dirty white dorsally, with yellow spine-like scales at each segment apically; spurs brown; hind femur and tibia grey ventrally, hind tibia black to brown dorsally in proximal half, white in distal half, with yellow spine-like scales in middle portion and at apex; hind tarsus white, each tarsomer yellow apically. Forewings: opaque-brown, with a small external transparent area consisting of 3 cells between common stem of R_4/R_5 and Cu_1 . Hindwing: transparent; fringe brownish. Abdomen: dorsal black; constricted at segments 3–5; tergite 1 with a narrow white posterior margin; tergite 4 white laterally; sternites 1–2 with white posterior margins; sternites 3–4 dirty white; sternites 5–7 grey, white in the middle part; anal tuft dorsally long and black, ventrally short and grey.

Male genitalia (Fig. 6; holotype, gen. prep. AK384/YA 1880). Uncus-tegumen weakly developed and sclerotized, uncus covered with short hairs, tegumen laterally with androconial scales (coremata); juxta forming a simple tube, covered with short setae; valva simple, covered with hair-like setae on the inner surface and long prominent hair-like setae at the margins and near the edges of the outer surface; with two fields of long and short androconial scales respectively near the base; saccus simple, bag-like (Fig. 6a); aedeagus long, pointed apically (Fig. 6b).

Diagnosis. This species can easily be separated from *C. naumanni* by its small size, the different antennal pectination, the larger transparent area of the forewing and the distinct morphology of the genitalia.

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摘 要

ベトナムと台湾のハチの様に腰の細いスカシバガの新種 (Axel Kallies ・ 有田 豊)

著者の一人有田と福住和也はベトナムでスカシバガの調査中に合成性フェロモンルアーに飛来したハチの様に腰の細いスカシバガをそれぞれ1種類ずつ採集した。また同様のスカシバガは台湾でも1種類採集された。これらは精査の結果、それぞれ *Gasterostena* 属と *Corematosetia* 属の新種であることが明らかになったので記載した。

Gasterostena rubricincta Kallies and Arita (Figs 1, 4)

この種は、ほかの既知種とは太い体と腹部の細い部分に1本の赤みがかったオレンジ色の帯があることで容易に区別される。ベトナム南部の Bao Loc の標高 600 m のところで合成性フェロモンルアーに2頭飛来した。

Gasterostena funebris Kallies and Arita (Figs 2, 5)

この属の全ての既知種はほとんど前後翅が透明であるのにたいして、この種の前翅はほとんど不透明で、後翅も部分的に鱗粉に覆われる。台湾南投県の Lushan で採集された。

Corematosetia minuta Kallies and Arita (Figs 3, 6)

本種は、*Corematosetia naumanni* Kallies and Arita, 2001 に似るが、前翅基部と中室外方部が透明であることで容易に区別できる。ベトナム南部の Damburi で採集された。

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